

**Attachment I**

## **Attachment I**

### **Applied Metering Technologies, Inc** **Training Practices**

#### **Description of AMT's training and experience regarding electrical safety:**

In addition to the experience gained in metering from the previous table and discussion, all of our technicians have completed formal classes within the utility's meter training program. A copy of Certificates of Completion issued by SCE for the journeyman technician position are on file for those AMT technicians that previously worked at SCE.

AMT technicians who formerly worked at SCE, have satisfactorily passed technical written examinations for the following meter positions:

Meter Shop Testman

District Singlephase Testman (Class 1 Technician in Illinois)

District Polyphase Testman (Class 2 & 3 Technician in Illinois)

Primary Testman (Class 3 Technician in Illinois)

Additionally, all four technician positions listed above require formal class room training once the written exam has been passed. The class room training lasts from one week to three weeks of hands on exercises for the three field positions. Class room training includes the use of meter test equipment and tools to properly install, calibrate and troubleshoot various meter types and meter configurations. Each testman must undergo up to several weeks of training in a simulated environment before the technician is allowed to perform any work in the field. The most critical aspect of this training is the intense focus on safety. Since all technicians will eventually be working in the field alone, the technical instructor must ensure that all safe work practices are followed and embedded in their routine. All of AMT's meter technicians have followed either this curriculum to attain their present status, or a similar curriculum from Pacific Gas and Electric Company (for our meter technician in northern California) or Commonwealth Edison (for our meter technician in the state of Illinois). For our meter technician in Illinois, he previously taught these same meter classes to other meter technicians in ComEd.

Following the hands on training, each technician is then accompanied by a supervisor for a week or two period who oversees his/her practices in the field before fully qualifying that person to work unsupervised. Again, the focus is on safety and overall accuracy of a metering installation. All AMT technicians have had this training as well.

As a final check to ensure technician practices are maintained, technicians are routinely brought in for refresher training, given updated technical training on new meters and meter devices, and visited by supervision to ensure their practices are safe and accurate. All AMT technicians have

## Attachment I

### **Applied Metering Technologies, Inc** **Training Practices**

gone through this in-depth field training and coaching while at their respective utilities. Since joining AMT, our technicians have had additional training on the use of the newer solid state meters and the internal meter software that is used on these meters. The same thorough curriculum that was followed at SCE will be followed by AMT to ensure the safety of our workers.

#### **Description of additional practices in Safety and Hiring.**

AMT will be following very similar practices to those used at various utilities. In addition to the measures above, AMT's program includes the following practices:

**Use of Safety Equipment:** All AMT technicians are issued the following safety gear and are required to wear this when conducting work on meters.

- a) Hard hat.
- b) Face shield.
- c) Rubber gloves, Class 0, rated at 1,000 volts.
- d) Leather protector gloves (used over the rubber gloves).
- e) NoMex flame retardant shirts.

In addition to the above, safety equipment includes the following based on the situation and the work environment:

- a) Ear plug protection
- b) Safety goggles
- c) Rubber gloves, Class 1, rated at 10,000 volts for primary voltages

**Hiring:** AMT has an entrance exam for future entry-level technicians. The exam consists of questions on basic electricity, algebra, and trigonometry -- the foundations from which metering principles are derived. A high school diploma is a basic requirement, and AMT will also inquire as to advance college level training in basic electrical and higher mathematics courses. AMT's hiring practices include a background check and a check for a valid drivers license.

For those individuals requesting work with AMT, their background will be assessed to ascertain whether prior utility work experience may qualify them for a higher classification than Class I Technician.

**Description of AMT's Personnel Qualification Standards for meter technicians:** AMT maintains Personnel Qualification Standards (PQS) and completes a training matrix form for each classification. Basically, this form measures the various levels of training completed by each

## **Attachment I**

### **Applied Metering Technologies, Inc Training Practices**

technician and the tasks that each technician is qualified to perform. Supervision, in combination with the lead technician, will date and initial the PQS form as training modules are successfully completed, or as the technician is qualified to complete various tasks. The PQS forms are attached for your review and include the Training Modules comprising AMT's Training Program.

Applied Metering Technologies (AMT) Training Program consists of Training Modules, simulated hands on application with equipment in a shop environment, and on the job oversight by our lead technician. Each step is closely monitored for quality and adherence to a strict safety program borrowed from our experience while working at Southern California Edison Company. For each classification, Personnel Qualification Standards (PQS) are maintained for each employee. The PQS for each classification are listed below. As training modules or hands on training are completed, the supervisor updates a matrix identifying the date and total number of hours of training. This matrix is reviewed to ensure the employee completes each of the modules and steps required to meet our standards.

#### **460.510(e)(1), Class 1 Technician Training Modules**

- QTR-001 The Singlephase Meter -Meter Reading
- QTR-002, Constants & Formulas
- QTR-003, Meter Adjustments
- QTR-004, Meter Compensation
- QTR-005, Recognition of Meter Forms
- QTR-006, Single Phase Meter Safety
- Taking Voltages
- QP-002, Visual Inspection
- QP-002, Energy Diversion Detection
- Connecting Communication Equipment
- Programming Singlephase Meters

#### **460.520(e)(1), Class 2 Technician Training Modules**

- QTR-011, Polyphase Transformer Connections
- QTR-012, Meter Types and Forms
- QTR-013, Blondell's Theorem
- QTR-014, Reactive Metering
- QTR-015, Polyphase Meter Safety
- Test Blocks & Test Switches
- Taking Voltages
- QTR-016, Current Transformers
- QTR-017, Instrument Transformer Safety Precautions
- QTR-018, Transformer Rated Meters
- QTR-019, Testing Self-Contained Polyphase Meters
- Awareness of Primary Panels

**Attachment I**

**Applied Metering Technologies, Inc**  
**Training Practices**

460.530(e)(1), Class 3 Technician Training Modules

QTR-021, Totalized Metering  
Polyphase Transformer Connections  
Testing Transformer Rated Meters  
Meter Programming  
Substation Safety Precautions  
Safety Procedures, Clearances & Tagging  
Primary Installations  
High Voltage Test Procedures

AMT Quality Procedure, QP – 008, Personnel Qualification Standards are followed to maintain the level of training and qualifications that AMT will require of its technicians. See attachment J for a description of these standards.

Attachment I

---

# IMSERV NORTH AMERICA

Document Title                      **METER SERVICE TRAINING PROGRAM**

Version Number                      1.1

Date                                      January 9, 2001

Amendment History

Version	Date
1.0	3-6-98
1.1	9-9-98
1.2	1-9-01

IMServ NA LLC 2001.

---

**Attachment I**

---

**METER SERVICE TRAINING PROGRAM****1. PURPOSE**

This document contains the training curriculum for the Meter Service staff.

**2. RESPONSIBILITIES**

Training for the Meter Service staff is the responsibility of the Vice President of Operations.

**3. SCOPE**

This document describes the training curriculum for the Meter Service staff. Training is grouped into eight modules as described in the table below.

<b>Training Module</b>	<b>Content of module</b>
1. Safety	Workstation ergonomics, lifting techniques, awareness of work environment hazards and communication
2. Interpersonal Interactions	Skills for dealing with internal and external customers (Customer Services). Responses to questions about MDMA/Data Collection services, procedures for handling difficult situations.
3. Meter concepts and terminology	Terminology, meter and recorder configuration, units of measurement.
4. Overview of Electric Industry Restructuring and MDMA/Data Collection requirements	Background, structure, main players and details of MDMA/Data Collection role.
5. Interval data training	Commission requirements for editing estimating and validation of raw data.
6. Illinois Data Exchange Protocol	Training in data transfer using applicable transfer format.
7. Vendor specific retrieval equipment	Equipment and software including database structure and individual account record set up, data retrieval functions, troubleshooting, file import and export.
8. Data and Database Integrity	Data and Database integrity checks including daily, weekly and periodic reasonableness checks.

---

**Attachment I**

---

**Module 1: Safety**

**1. COURSE CONTENT**

- 1 hour ergonomics training with optional workstation evaluation
- 1 hour lifting techniques training
- 2 hours per year work area safety awareness training

**2. ERGONOMICS TRAINING**

Employees will be trained to have an understanding of workstation ergonomics so that they are in a position to:

- 1) Evaluate their own workstation and report problems where necessary
- 2) Assume the correct techniques and posture when using their workstation

All employees will undergo a one hour training session comprising:

- 1) A presentation on workstation ergonomics
- 2) Instruction on posture and use of keyboard / monitor

All new employees will be asked to complete a workstation evaluation.

Managers will be responsible for implementing any changes as a result of the evaluation, or where employees raise problems.

**3. LIFTING TECHNIQUES TRAINING**

All employees will be trained to have a practical knowledge of the correct techniques to be used when lifting objects.

A one-hour training session will be run to cover the following:

- 1) Understand kinetic techniques for Manual Handling including assessment and planning the list
- 2) Understand the risks of manual handling
- 3) A practical demonstration of handling techniques

**4. WORK AREA SAFETY TRAINING**

All employees will receive a leaflet entitled "Safety in the Workplace", and employees will receive a total of one hour's training on workplace safety each year. This will include:

- 1) Fire drill
- 2) Team talk on safety issue
- 3) Receipt of annual safety bulletin



---

Attachment I

---

**Module 2: Interpersonal Interactions / Customer Service**

**1. COURSE CONTENT**

The course will comprise a total of 6-8 hours formal instruction in customer service. The course will be followed up with an on the job evaluation of each employees customer service performance.

The course will be structured into the following sections:

- 1) Customer service - 2 hours
- 2) Identifying our customers - 1 hour
- 3) Answering questions about MDMA/Data Collection services - 2 hours
- 4) How to handle difficult situations - 1 hour

**2. IDENTIFYING CUSTOMERS AND THEIR REQUIREMENTS**

The course will focus on the identification of the Meter Service's customers, with a focus on the complex relationships between players in the Electricity market. Employees will be made aware that their customer service relationship extends beyond the direct contractual link with the ESP to the Utility Distribution Companies, Meter Service Providers, Scheduling Coordinators and End Use Customers.

**3. CUSTOMER SERVICE**

This part of the course is aimed at describing the principles of customer service, and how these should be applied when dealing with the Meter Service's customers.

**4. ANSWERING QUESTIONS ABOUT MDMA/DATA COLLECTION SERVICES**

Employees will be given guidance as to how to answer questions about the meter service. This part of the course relies on completion of Module 4 "Overview of the Electricity Industry and Meter Service requirements". The course will place emphasis on the need to be able to explain the relationship of Meter Service Provider to the Energy Service Provider and Utility Distribution Company to End Use customers.

**5. HOW TO HANDLE DIFFICULT SITUATIONS**

This part of the course will comprise a mixture of presentation and role-playing to develop skills in handling difficult situations. The emphasis of the course will be to ensure that employees can deal effectively and courteously with End Use Customers in difficult situations.

## Attachment I

---

### Module 3: Meter Concepts and Terminology

#### 1. COURSE CONTENT

- 1) Guide to interval meters
- 2) Meter and recorder configuration
- 3) Units of measure

#### 2. GUIDE TO INTERVAL METERS

This part of the course will provide employees with a guide to the types and makes of interval meter. Particular emphasis will be placed on the Illinois Corporation Commission meter standards.

#### 3. METER AND RECORDER CONFIGURATION

The aim of this part of the training program is to give employees an understanding of how meters and recorders are configured.

---

**Attachment I**

---

**Module 4: Overview of Electric Industry Restructuring and Meter Service requirements**

**1. COURSE CONTENT**

- 1) Overview of restructuring - one hour presentation
- 2) The role of Meter Service - one hour presentation

**2. OVERVIEW OF RESTRUCTURING**

The purpose of this part of the course is to ensure that employees have a global picture of the industry and understand how each of the industry players interacts. The course will comprise a presentation that will describe the traditional structure of the industry, the impetus for change and the new structure of the industry.

**3. THE ROLE OF METER SERVICES**

The purpose of this part of the course is to ensure that employees understand how their job fits into the overall role of Meter Services. The course will comprise a presentation on the role of Meter Services, an explanation of its relationship with other market participants and an overview of the systems used to carry out the function. Particular emphasis will be placed on the importance of meeting industry deadlines.

---

**Attachment I**

---

**Module 5: Interval Data Training****1. COURSE CONTENT**

The course will provide employees with a clear understanding of the way in which interval data must be handled. The course will combine presentations with practical exercises in data handling using the companies systems. The course will be structured as follows:

1) Data Validation for hourly and monthly interval data:

- Spike checks
- High-low average daily usage
- Sum check
- Hardware checks
- Time of Use Check
- Zero Consumption check
- Usage on inactive meters check

2) Missing data and Estimation rules

3) Flagging data

4) Meter Configuration checks:

- Meter dial quantity difference
- Meter reading dial decimal quantity
- External meter identification

Employees will receive individual tuition appropriate to their role that will include using the companies systems to perform validation, estimation and flagging.

Employees that are involved in field meter reading will be trained to identify discrepancies in meter configuration.

---

**Attachment I**

---

**Module 6: Illinois Data Exchange Protocol**

**1. COURSE CONTENT**

The course will describe the Illinois data exchange protocol with particular reference to the records that are important to the role of Meter Services.

The course will consist of the following:

- 1) A presentation describing the data exchange format, the key records for Meter Services use and likely future developments
- 2) Individual job specific training in the workplace, including test scenarios
- 3) Provision of reference manuals

**2. PRESENTATION ON DATA EXCHANGE FORMAT**

A one-hour presentation will be given to employees, including a questions and answers session. The presentation will cover the following:

- 1) Overview
- 2) An explanation of the industry-wide use of the protocol
- 3) Focus in detail on the records relating to the role of Meter Services
- 4) Interpretation of records
- 5) Description of systems using the data exchange format including the Meter Services server

**3. JOB SPECIFIC TRAINING**

All employees responsible for data exchange will be given individual training at their workstations. The aim of this training will be to ensure that trainees have a detailed practical understanding of how to use the applicable formats in their role.

The training will involve the employee carrying out various data exchange functions using test scenarios in order to demonstrate that the principles are understood.

---

**Attachment I**

---

**Module 7: Data retrieval equipment**

**1. COURSE CONTENT**

The course is designed train staff working in the Meter Reading Team, the Data Production Team and the Star Delivery Team.

**2. MV90 TRAINING**

Staff will receive training in the use of MV90 from UTS. The standard course duration is two days.

Course work is followed up by on the job training. New Team members will work along side-experienced staff to ensure that the skills specific to the role performed are practiced in a working environment.

Advanced training will be given as appropriate.

**3. VENDOR SPECIFIC RETRIEVAL EQUIPMENT**

Certain members of the Meter Management Team will be required to receive training on Vendor Specific Retrieval Equipment. This is particularly relevant to Team members involved in remote diagnostics.

Staff will receive manufacturer's manuals and where necessary will attend a training course recommended by the manufacturer.

## **Module 8 - Data and Database Integrity**

### **1. COURSE CONTENT**

It is essential that the Meter Services operational staff receive training on data and database integrity. This training will be in addition to specific process and software training that may be given to fulfill individual role requirements.

A formal one-day course will cover the following items:

- ★ What is data?
  - ★ Meter standing data
  - ★ Usage data
- ★ Data formats
  - ★ MV-90
  - ★ MDMA/Data Collection Server
- ★ The importance of data quality in the electricity market
  - ★ The value of customer data
  - ★ The consequences of inaccurate data
  - ★ Good data handling practice
- ★ Back up and Archiving
- ★ Database maintenance and housekeeping
- ★ IMServ NA' databases